

What is claimed is:

- 1 1. A method of updating a network of a plurality of sensors from a remote base
2 station, comprising:
 - 3 selecting sensors to be updated along with data files;
 - 4 alerting selected sensors of the upcoming update;
 - 5 receiving at the remote base station the acceptance or rejection of the update
6 from selected ones of the plurality of sensors;
 - 7 transmitting the selected data files to the sensors that accept the updating
8 data files; and
 - 9 initiating update after all the selected data files are downloaded to each of
10 the selected sensors.
- 1 2. The method of claim 1 further comprising:
 - 2 receiving at the base station notification from a sensor that data files are
3 missing; and
 - 4 retransmitting the data files to all sensors that are missing data files from the
5 first transmission.
- 1 3. The method of claim 1 wherein initiating further comprises:
 - 2 storing files in the sensors that are not being updated;
 - 3 stopping sensor activity during updating;

4 restoring all files;
5 comparing files for completeness; and
6 resuming sensor activity after updating is complete.

1 4. The method of claim 1 wherein initiating further comprises:
2 scheduling a time for the update.

1 5. A method of receiving and updating data files in a sensor remotely,
2 comprising:
3 receiving a broadcast notification of an update of data files;
4 accepting or declining the data file update;
5 switching to active state if the data file update is accepted;
6 receiving data file;
7 inspecting data files for completeness;
8 requesting any missing data files;
9 listening for broadcasts of missing files;
10 storing data files not being updated once all data files are received;
11 stopping all sensor activity and initiating update; and
12 resuming all sensor activity after updating is complete.

1 6. A processor readable storage medium containing processor readable code for
2 programming a processor of a sensor from a remote base station to perform a
3 method comprising the steps of:
4 receiving a broadcast notification from the base station of an update of data
5 files;
6 accepting or declining the data file update;
7 switching to active state if the data file update is accepted;
8 receiving data file;
9 inspecting data files for completion;
10 requesting any missing data files;
11 listening for broadcasts of missing files;
12 storing data files not being updated until all data files are received;
13 stopping all sensor activity and initiating update; and
14 resuming all sensor activity after updating is complete.

1 7. A processor readable storage medium containing processor readable code for
2 programming a processor in a base station to update a network of a plurality of
3 remote sensors to perform a method comprising the steps of:
4 selecting sensors to be updated with data files to perform the updating;
5 alerting selected sensors of the upcoming update;

6 receiving at the base station acceptance or rejection of the update from
7 selected ones of the plurality of sensors;
8 transmitting from the base station the selected data files to the sensors to
9 accept the updating data files; and
10 initiating update after all the selected data files are downloaded to each of
11 the selected sensors.

1 8. The processor readable storage medium method of claim 7 further
2 comprising the steps of:
3 receiving notification from a sensor that data files are missing; and
4 retransmitting the data files to all sensors that are missing data files from the
5 first transmission.

1 9. A message data structure for communicating between a remote base station
2 and a network of a plurality of sensors, comprising:
3 a first data field indicating a destination of a message;
4 a second data field representing message type;
5 a third data field representing group identification;
6 a fourth data field indicating the length of the message;
7 a fifth data field containing a command;
8 a sixth data field containing a subcommand;

9 a seventh data field containing a checksum for a program code to be used in
10 validation;
11 a eighth data field containing a sequence for a code capsule; and
12 a ninth data field containing the data packet itself.

1 10. A system for updating selected ones of a plurality of remote sensors,
2 comprising:
3 a base station for selecting sensors to be updated and the programs to do the
4 updating and for sending messages containing updating programs to
5 the remote sensors;
6 an in-network programming module located within the remote sensor to
7 receive the messages from the base station; and
8 a main module communicatively coupled to the in-network programming
9 module for updating programs received by the in-network
10 programming module in the messages received from the base station.

1 11. The system of claim 10 wherein the in-network processing module further
2 comprises:
3 a pre-programmed unique address.

1 12. The system of claim 11 wherein the messages from the base station include
2 the pre-programmed unique address of the in-network processing module.